

# Work Order ID 62840

Friday, October 08, 2010 2:55:00 PM



Page 1

Item ID: D205-634-041

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 10/8/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 10/27/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

*[Signature]*

Date:

10-10-8

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D2580	Rev D

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy D205-634 bluefile & type labels per PPP D205-634-041 CHG002

N/A OK 10/11/03 *[Signature]*

110

0.00



BENDING MACHINE - SKIDTUBES

CNC Bend I

Memo

0.00

CNC Delta 100 Bender

1-Bend as per program D2580.C on CNC Bender and Folio 16

2-Cut tubes as per Dwg. D2580

3- scribe batch# in aft end of tube

*[Signature]*

10-10-19

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120		0.00							
						(X)			
Skidtubes	Memo	0.00							
Skidtubes	1- Deburr ends and remove marks bending marks								
	2- C'sink holes as per dwg without cutting fluid								
	3- Prepare tube for welding, remove alodine as required.								
130	QC5- Inspect part completeness to step on W/O	0.00							
						X/			
QC	Memo	0.00							
Quality Control									

BE 10/10/20

W/O:		WORK ORDER CHANGES					
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QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

140

0.00

Skidtubes

Memo

0.00

1-Weld step D2576 as per Dwg. D2580 and QSI 004  
A/R□□□ Aluminum Rod

M115778

BE 10/10/21

2-Prep per QSI 005 and weld crossbolt spacers D2579 as per Dwg. D2580, QSI 004.

For D2579 spacers, weld one side, pass 3/8" drill, weld other side, pass 3/8" drill

A/R□□□ Aluminum Rod

M115778

BE 10/10/21

3-Grind welds as per Dwg D2580 Grind flush ridge made from bending

4-Drill holes for wearplates using DT 8217 &amp; DT8937 Open holes to 19/64", adjust stopper not to hit web. Debur

5-Counterbore crossbolt spacers to 7/16" ID x 1.0" deep as per Dwg D2580. Debur holes

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Debur

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Debur

DP 10-10-25

W/O:		WORK ORDER CHANGES					
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QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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150

QC10- Inspect visual per QSI004- ground welds

0.00



QC

Memo

0.00

Quality Control

8/10/10/26

160

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

8/10/10/26

H

170

Pressure Wash per QSI005 4.3

0.00



HandFinish

Memo

0.00

Hand Finishing

=&gt; H 10/10/27

1 /

✓ Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch and leave fwd  
cap out of solution.

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
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Reference:						

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	QC:	Date:	SPC (Y/N):	Date:		Stop	

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180  Powdercoat Powder Coating	White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum <i>M 115291</i> Memo START TIME: <i>9:00</i> OVEN TEMPERATURE: <i>320°</i> FINISH TIME: <i>9:00</i>	0.00 <i>HL 10-10-27.</i> 0.00				<i>①</i>			
190  QC Quality Control	QC3- Inspect Part Finish  Memo	0.00 <i>=&gt; HL 10/10/28</i> 0.00				<i>1</i>	<i>0</i>		

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QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

200

0.00



HandFinish

Memo

0.00

Hand Finishing

200 10/10/28

1 9

1-Install inserts &amp; wearplates &amp; Gaskets as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates

A/R ☐ ☐ ☐ Sikaflex-291 ☐ 11/15/10

Sikaflex expire date: 11/01

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step &amp; Aft Cap with Sikaflex. Clean excess adhesive

A/R ☐ ☐ ☐ Sikaflex-291 ☐ 11/15/10

Sikaflex expire date: 11/01

5-Wing Walk as per Dwg D2580 and QSI 005 4.4

Batch: 1115790

W/O:		WORK ORDER CHANGES					
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QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

210



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

S1011102

0.00

Memo

Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

XC

220



Packaging

Packaging

Packaging

0.00

Memo

Identify and pack for shipping as per PPPD205-634-041

Location: \_\_\_\_\_

PPP Rev: \_\_\_\_\_ PP161731

0.00

10/11/03

230



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

10/11/03

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Page 1

Work Order ID: 62840

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube



Start Date: 10/8/2010

Required Date: 10/27/2010

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30 KJ  
 IPP Rev P 10.02.19 per PAR09-043 EC verified by:DD  
 IPP Rev. O 06.02.28 Added paperwork EC  
 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D2580-1		Manufactured	No			110	Each	3.0000	1	1			
205 Skidtube bent detail													

Location	Loc Qty	Loc Code
LG	2	
62047	1	
62048	1	
ST046	1	
59856	1	

① 10-10-19

D2576-3		Manufactured	No			140	Each	68.0000	1	1			
Step (maching detail)													

Location	Loc Qty	Loc Code
LG	68	
46661	20	
52215	48	

BE 10/10/21

W/O:		WORK ORDER CHANGES					
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Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 10/8/2010

Required Date: 10/27/2010

Start Qty: 1.00

Required Qty: 1.00

D2579 Manufactured No 140 Each 144.0000 20 20



Crossbolt Spacer

Location Loc Qty Loc Code

LG 144  
57052 5  
57348 4  
58433 2  
59113 7  
60845 1  
61199 125

D2855 Manufactured No 200 Each 61.0000 1



Cap

Location Loc Qty Loc Code

FP6 1  
56613 1  
ST026 60  
50513 1  
50770 28  
51539 2  
53791 29

AN3-5A Purchased No 200 Each 1,451.000 2



Bolt

Location Loc Qty Loc Code

ST350 1451  
105057 451  
115016 500  
115371 500

20 BE 10/10/21

11.10110128

y1

2 11.10110128

y2

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Shop Packet Print

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Start Qty: 1.00

Required Qty: 1.00

AN960JD10L NAS1149D0332J Purchased No



Washer

ALS7-1032-130 Purchased No



Insert

200 Each 0.0000 2 2

1114348



x2 10/10/28

200 Each 1,746.000 50 50



10/10/28

## Location

## Loc Qty

## Loc Code

FP

729

M115911

x50

115079

729

ST282

1017

113238

17

115502

500

115581

500

AN3C4A Purchased No



BOLT

200 Each 1,611.000 50 50



10/10/28

## Location

## Loc Qty

## Loc Code

ST245

20

110139

20

ST303

3

115438

3

ST350

1588

114108

14

114416

12

114523

2

115300

560

115589

1000

x50

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Required Date: 10/27/2010

Start Qty: 1.00

Required Qty: 1.00

AN960C10L NAS1149C0332 Purchased No

200 Each 29.0000 50 50



10/10/28

washer

## Location

## Loc Qty

## Loc Code

ST245

29

107534

29

1115832

Y50

D3566-13 Manufactured No

200 Each 35.0000 1



10/10/28

Gasket

## Location

## Loc Qty

## Loc Code

FP012

35

59661

1

60209

8

61996

26

V1

D3566-5 Manufactured No

200 Each 22.0000 1



10/10/28

Gasket

## Location

## Loc Qty

## Loc Code

FP

10

60869

10

FP015

12

62463

12

V1

D3566-1 Manufactured No

200 Each 23.0000 2



10/10/28

Gasket

## Location

## Loc Qty

## Loc Code

FP015

23

57715

2

60202

10

61992

11

B62892

Y2

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Start Qty: 1.00

Required Qty: 1.00

D3564-11

Manufactured No

200 Each

14.0000

1



Wearshoe



10/10/28

Location

Loc Qty

Loc Code

FP019

14

60302

2

61708

12

D3564-13

Manufactured No

200 Each

35.0000

1



Wearshoe



10/10/28

Location

Loc Qty

Loc Code

FP17

35

59660

1

60862

10

61828

12

62229

12

D3564-9

Manufactured No

200 Each

19.0000

1



Wearshoe



10/10/28

Location

Loc Qty

Loc Code

FP

1

55334

1

FP019

18

60236

5

61709

13

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Required Qty: 1.00

D3564-5

Manufactured No

200

Each

23.0000

1

1



Wearshoe



10/10/28

Location

Loc Qty

Loc Code

FG

1

34806

1

FP19

8

57525

1

58709

1

61699

6

FP-19

14

60868

1

62237

13

D2594-3

Manufactured No

200

Each

931.0000

16

16



O-Ring, 205 Skidtube



10/10/28

Location

Loc Qty

Loc Code

FP

43

55546

19

58191

12

59358

12

fpa

888

61762

888

X16

Friday, October 08, 2010 2:55:04 PM

Shop Packet Print

Page 6

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

Friday, October 08, 2010 2:55:04 PM

Page 7

Work Order ID: 62840

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 10/8/2010

Required Date: 10/27/2010

Start Qty: 1.00

Required Qty: 1.00

D2594-1

Manufactured No

200

Each

267.0000

16

16



Plug, 205 Skidtube



*Handwritten signature*

Location

Loc Qty

Loc Code

FP

183

42807

112

55002

71

FP14

84

58434

15

61932 \*

69

*1362893*

*X9*

*X7*

W/O:		WORK ORDER CHANGES					
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**NOTE:** Date & initial all entries

**DART**

DESIGN #	DRAWN BY RH	<b>DART AEROSPACE LTD.</b> HAWKESBURY, ONTARIO, CANADA	
CHECKED #	APPROVED #	DRAWING NO. D2580	REV. D SHEET. 1 OF 3
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY	SCALE NTS
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

**RELEASED**  
07-06-28 #

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

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R  
F0.628410  
P11010-8**GENERAL NOTES:**

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL  $\varnothing 0.297$  HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:  
SEE NOTES ON  
PAGE 2 FOR D2580-041 AND  
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

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W/O:		WORK ORDER CHANGES						
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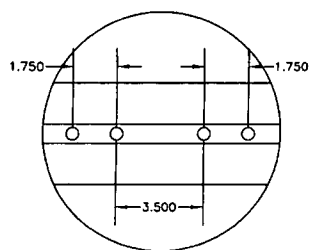
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

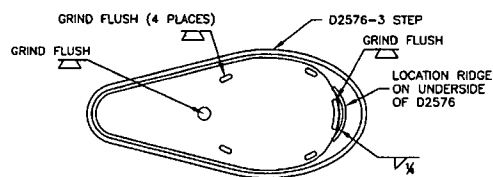
**NOTE:** Date & initial all entries

**DETAIL A**  
SCALE 5:24

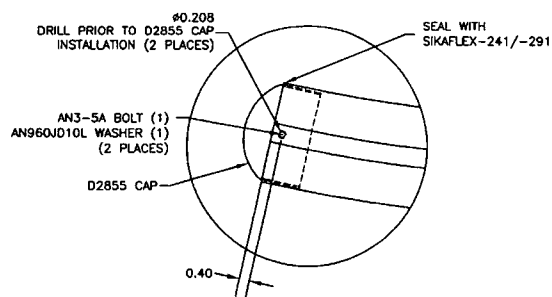


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07-06-28

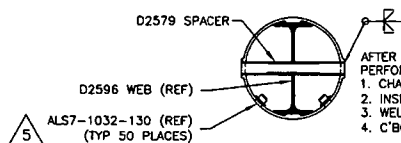
**DETAIL B**  
SCALE 5:24



**DETAIL C**  
SCALE 5:24



**SECTION D--D**  
SCALE 5:24



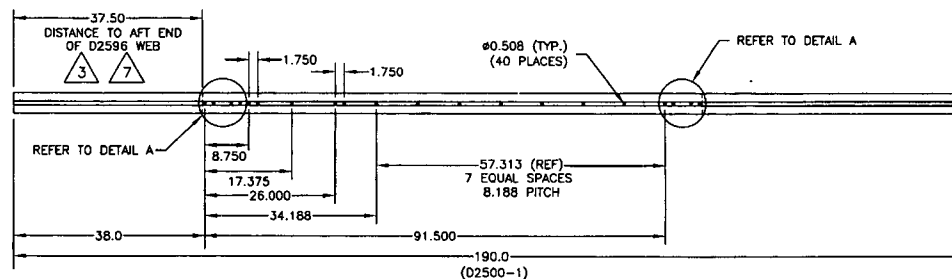
AFTER DRILLING AND BENDING ASSEMBLY  
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:

1. CHAMFER HOLE 0.050 X 45°
2. INSERT D2579 SPACER (20 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP

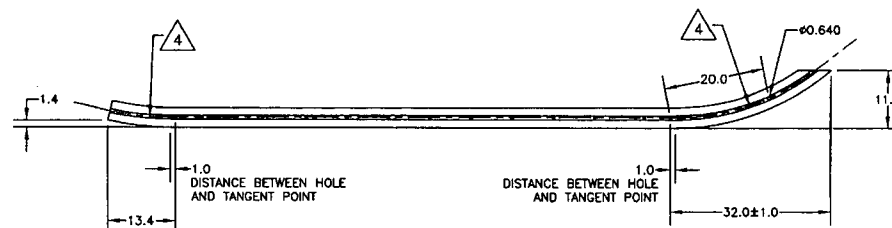
**D2580-041 NOTES**

- i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB POWDER COAT ASSEMBLY GLOSS WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3 BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

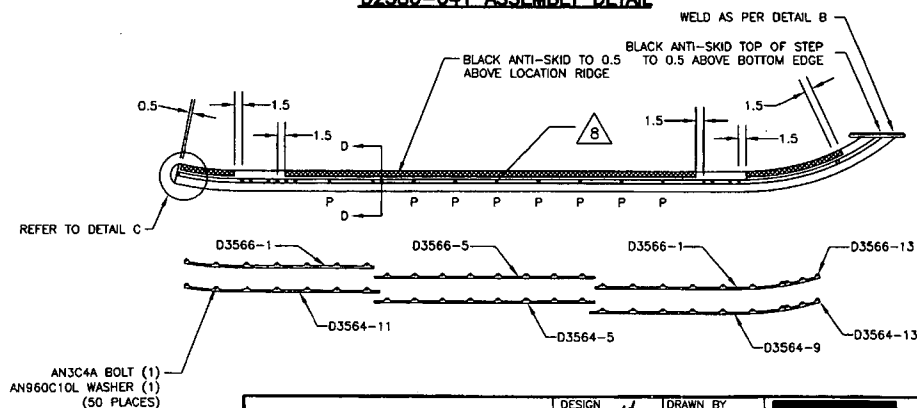
D2580-1 DRILLING DETAIL



D2580-1 BENDING AND CUTTING DETAIL



D2580-041 ASSEMBLY DETAIL



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

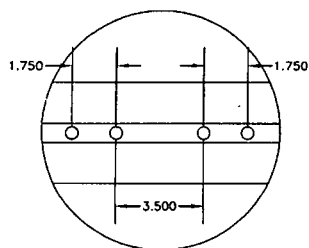
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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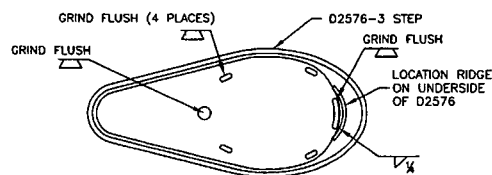
**NOTE:** Date & initial all entries

**DETAIL E**  
SCALE 5:24

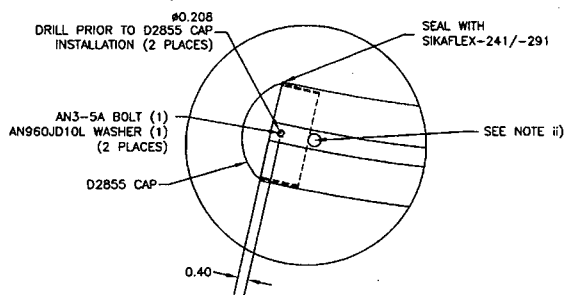


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07 Dec 28

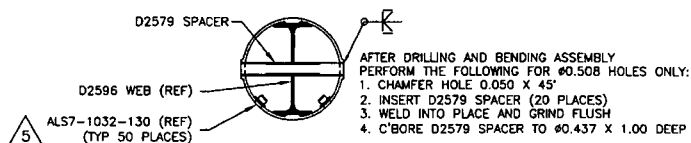
**DETAIL F**  
SCALE 5:24



**DETAIL G**  
SCALE 5:24



**SECTION H-H**  
**SCALE 5:24**

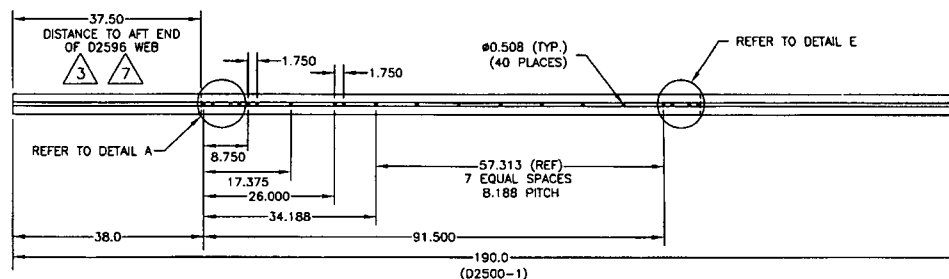


$\triangle C$

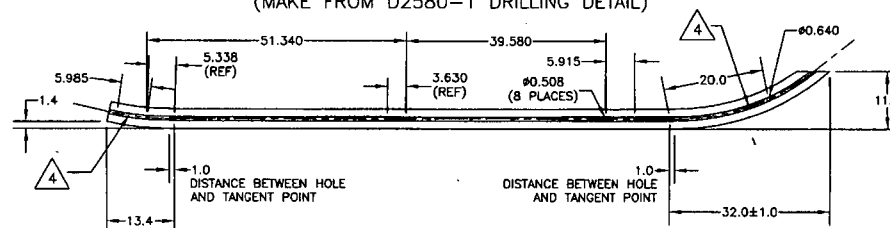
**D2580-045 NOTES**

- i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB  
POWDER COAT ENTIRE ASSEMBLY GREEN (REF. 4.3.5.8) PER DART QSI 005 4.3  
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4
- ii) IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE  
WITH THE SPACER AT THIS LOCATION

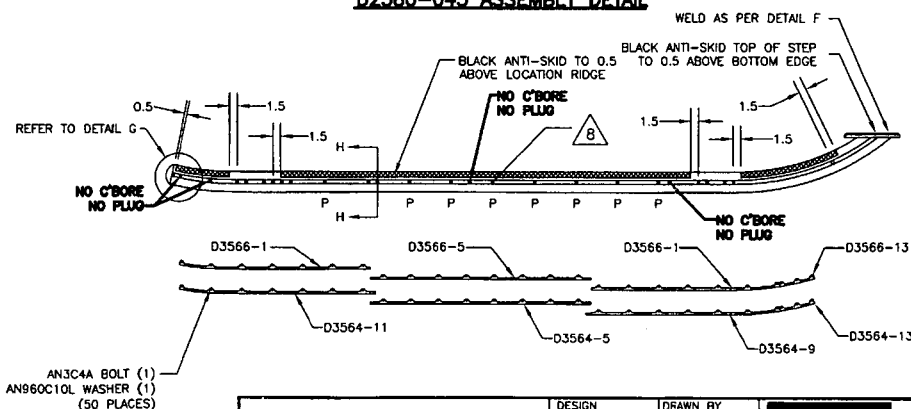
D2580-1 DRILLING DETAIL



**D2580-5 BENDING AND CUTTING DETAIL**  
(MAKE FROM D2580-1 DRILLING DETAIL)



**D2580-045 ASSEMBLY DETAIL**



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DESIGN

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CHECKED : 7

**DRAWN BY**

24

**DART** DART AEROSPACE LTD.  
HAMMERSLEY, ONTARIO, CANADA

DRAWING NO.	REV. D
D2580	SHEET 3 OF 3
TITLE	SCALE
205 SKIDTIRE ASSEMBLY	1:24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

NO. 240

AWS D17.1.2001  
QUALIFICATION TEST RECORD

Name: Barday Elliott  
Job number: 62176  
Part number: D205-634-041  
Description: 205 skid tube  
Welding Process: Tig[☒] Mig[ ]  
Base material: Aluminium  
Current: AC[☒] DC[ ]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[ ]  
Penetration: pass[☒] fail[ ]

UNACCEPTABLE

Cracks: pass[☒] fail[ ]  
Undercut: pass[☒] fail[ ]  
Pin holes: pass[☒] fail[ ]  
Overlap (cold lap): pass[☒] fail[ ]  
Porosity (surface): pass[☒] fail[ ]  
Coloration: pass[☒] fail[ ]

Qualifier P. P. Date of Test Coupon 10.09.30  
Welder Barday Elliott Date of Test Coupon 10.09.30

The above named individual is qualified in accordance with AWS D17.1.2001 to weld